

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371U.S. APPLICATION NO. (If known, see 37
C.F.R. 1.53)
09/762876

INTERNATIONAL APPLICATION NO.

PCT/BR99/00047

INT'L FILING DATE

June 17, 1999

PRIORITY DATE
CLAIMED

August 11, 1998

TITLE OF INVENTION. **MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGE**APPLICANT(S) FOR DO/EO/US: **GOUVEA, Nereu et al.**

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau)
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 16 below concern other document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 C.F.R. 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment.
☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:
 - a. ☐ Submission Under 37 C.F.R. 3.73(b)
 - b. ☒ Power of Attorney
 - c. ☒ International Publication No. WO 00/10319
 - d. ☒ Notice Informing the Applicant of the Communication of the International Application to the Designated Offices
 - e. ☒ Notification of Transmittal of International Examination Report
 - f. ☒ International Search Report
 - g. ☒ Notification of Receipt of Demand by Competent International Preliminary Examining Authority
 - h. ☒ Notification Concerning Submission or Transmittal of Priority Document
 - i. ☒ Information Concerning Elected Offices Notified of their Election

| | | | | | |
|--|--------------|--|------------|--|-----------|
| U.S. APPLICATION NO. (If known, rec. 37 C.F.R. 1.57) <div style="font-size: 24pt; font-weight: bold; margin-top: 5px;">09/762876</div> | | INTERNATIONAL APPLICATION NO PCT/BR99/00047 | | ATTORNEY'S DOCKET NUMBER G334 312-1 | |
| 17. [X] The following fees are submitted: BASIC NATIONAL FEE (37 C.F.R. 1.492(a)(1)-(5)) International preliminary examination and search fees not paid to USPTO and International Search Report not prepared by the EPO or JPO \$ 1000 00 International Search Report prepared by the EPO or JPO \$ 860 00 International search fee paid to the USPTO \$ 710.00 International preliminary examination fee paid to USPTO. \$ 690 00 International preliminary examination fee paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$ 100 00 ENTER APPROPRIATE BASIC FEE AMOUNT = \$1000 00 | | | | CALCULATIONS PTO USE ONLY | |
| Surcharge of \$130.00 for furnishing the oath or declaration later than_ 20_ 30 months from the earliest claimed priority date (37 C.F.R. 1.492(e)) | | | | \$0 | |
| Claims | Number Filed | Number Extra | Rate | | |
| Total claims | 6 - 20 = | 0 | 0X \$18.00 | \$0 | |
| Ind. Claims | 1 - 3 = | 0 | 0X \$80 00 | \$0 | |
| Multiple dependent claim(s) (if applicable) | | | + \$270 00 | \$0 | |
| TOTAL OF ABOVE CALCULATIONS | | | | = | \$1000 00 |
| Reduction by 1/2 for filing by small entity, if applicable Small Entity Statement must also be filed (Note 37 C.F.R. 1.9, 1.27, 1.28) | | | | \$500 00 | |
| SUBTOTAL = | | | | \$500 00 | |
| Processing fee of \$130 00 for furnishing the English translation later the_ 20_ 30 months from the earliest claimed priority date (37 C.F.R. 1.492(f)) | | | | \$0 | |
| TOTAL NATIONAL FEE = | | | | \$500 00 | |
| Fee for recording the enclosed assignment (37 C.F.R. 1.21(h)) The Assignment must be accompanied by an appropriate cover sheet (37 C.F.R. 3.28, 3.31) \$40 00 per property | | | | \$40 00 | |
| TOTAL FEES ENCLOSED = | | | | \$540 00 | |
| | | | | Amount to be refunded | \$ |
| | | | | Charged. | \$ |
| a. <u>X</u> A check in the amount of <u>\$540.00</u> to cover the above fees is enclosed. b. <u> </u> Please charge my Deposit Account No. 11-0982 in the amount of_ to cover the above fees A duplicate copy of this sheet is enclosed c. <u>X</u> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 11-0982 A duplicate copy of this sheet is enclosed NOTE: Where an appropriate time limit under 37 C.F.R. 1.494 or 1.495 has not been met, a petition to revive (37 C.F.R. 1.137(a) or (b)) must be filed and granted to restore the application to pending status | | | | | |

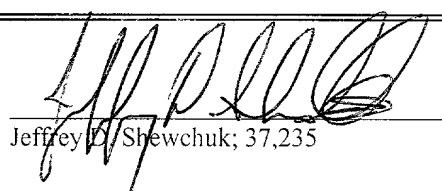
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"MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGES".

This invention patent refers to an electronic system developed so as to command a matrix for the reproduction of video images in real time through pixels (image elements) in a way that the image reproduced on the matrix has the same advantages and the same attitude of the conventional cathodic ray tubes that is it may display composite video images in real time without the previous processing of analog/digital or digital/analog converters, without the need for microprocessors, digital memories, shift registers or even computers and converters which are normally needed so that images could be generated on a pixel matrix.

The display of information under the form of dynamic image when this is obtained by means of electronic reception or storage has been performed with a device called kinescope for more than 70 years.

The kinescope is a glass device with thick walls, large dimensions and heavy, able to stand the external pressures once there is vacuum inside; the basic principle is to reproduce an image by means of an electron beam that sweeps a screen embedded with phosphorus oxide and other elements, producing light during a time lapse according to the speed and quantity of electrons that hit the mentioned screen. The beam sweeping is controlled electrically or magnetically and is obtained by means of external analog devices, it is also necessary a high voltage producing device (approximately 25,000 volts) to accelerate the electrons inside the tube. Even though all the technology developed and available all over the world, it has not yet been possible to produce a device that could substitute the kinescope for television sets and/or computer monitors with the same image quality, cost and performance.

This is due mainly because inside the kinescope the image is generated analogically, the image resolution is not limited by a fixed number of

pixels and/or light intensity once the resolution and image quality depend on the passing band of the circuit through which the video signal is transmitted rather than the kinescope itself as an image reproduction element. Cathodic ray kinescopes present the inconvenience of the size limit due to the need of very high tension to be generated (the larger the kinescope the higher the tension needed) and due to image convergence difficulties. In the last 70 years, because of these reasons commercially speaking, the size of kinescopes did not go much beyond 37" diagonally.

However, with the advent of liquid crystals and advances in the development of photoluminescent displays and associated technologies, we have nowadays computer monitors and even television sets of very light weight that consume less energy and are competitively priced. Yet when we talk about image quality we must consider what is the objective, for instance if we talk about a PC which display image is in general static and with a defined number of pixels and light hues, generally 16, 32, 256, etc. there is no problem, but when we speak about televisions with 100% dynamic images producing around 60 frames per second and with a resolution that changes constantly needing moreover a viewing angle of 120° it is totally different; limitations regarding transmission speed due to digitalisation of the image, level of luminosity and narrow viewing angle are a great disadvantage, the latter almost discards the production of large dimension liquid crystal monitors in substitution of kinescopes in commercial television sets.

There is another kind of monitor utilising LED's (light emitting diodes), these generally of large dimensions, destined to be used as electronic outdoor billboards for publicity (also called electronic panels) the working principle is very much the same of the liquid crystal one, the **Principle of Image Digitalisation**; according to this principle any image or drawing that we wish to display may be digitally recorded or converted like computers that use the binary 100101 to represent the number 37, we may use the same

binary 100101 to represent a colour or a light intensity onto a determined point of the display that has its moment authorised by the matrix coordinates in a logical and precise manner. Thus the image is always static and previously known.

5 The "MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGES" is not a new "type of monitor", but a new way of control configuration for matrixes that when applied to LED matrixes or even to the principle of cathodic ray kinescopes (photoluminescent matrix) would considerably improve performance of these.

10 As an example, it would be enough to use the "MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGES" together with the principle of photoluminescence already widely used on electronic equipment in general as a result of which the weight of cathodic ray kinescopes, specially the largest ones, would become eight tenths, it would not be necessary to have
15 external circuits for the generation of high tension, deflecting coils or others that will rise the final price of the product or even the difficulty of manufacturing 100", 200" or more diagonally and even then the thickness of the monitor would be practically the same, like of a picture frame on the wall, correspondingly to photoluminescent displays.

20 For an improved phosphorus brightness it is presented in this patent the inclusion of a further sequence of grids so as to build a matrix together with the existing grids and the common connection of all the anodes or unique anode o apply a higher fixed voltage, and on this the phosphorus may be laid onto, either monochromatic or polychromatic.

25 I would not be necessary to digitise the image for LED matrix or photoluminescent matrix or even the need for previous processing of the video information by means of analog/digital or digital/analog converters, without the need for microprocessors, digital memories, shift registers or even computers and converters which are normally needed so that images could be

generated on a pixel matrix. Likewise resolution would not be conditioned to a pre-determined number, those matrixes would turn to work as an **analog monitor** thus greatly improving the image quality with a considerable reduction of cost. For a better understanding of the "MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGES" follows a description with reference to the annexed drawings.

- Drawing 1 shows a general view of the matrix controlled by two devices of sequential distribution.

- Drawing 2 shows an enlarged view of a pixel with an analog memory for working appliances like LED's, lamps and others.

- Drawing 3 shows the arrangement of a system for the assembly of polychromatic pixels onto a photoluminescent appliance.

The system consists of two sequential devices, one is vertical for the connection to the matrix vertical line (1) and another one for horizontal connection of the matrix column (2). Each of the sequential distribution devices has got its own oscillator, one for the vertical connection (3) and one for the vertical connection (4) which according to its adjustment, vertical (5) or horizontal (6) determine the height and width of the matrix image. The sequential distribution device has got sequential outputs from S_1 (7) to S_n (8) where n determines the maximum and only the maximum of the matrix column or line for the authorisation connection of the pixels (9). These sequential devices (1) and (2) may be built with dedicated components, transistors, passive element, logical ports and so on. For best image resolution the oscillator frequency (3) of the sequential device (1) that commands the matrix lines must be equal to the vertical frequency of the source video signal multiplied by the number of pixels of the matrix column, likewise the oscillator frequency (4) to the sequential device (2) that controls the matrix columns must be given by the horizontal frequency of the video signal multiplied by the number of pixels of the matrix line; to be remarked that it is not established a

logical connection between the line command and the column command (characteristic of the digital system). This characteristic that initially does not establishes any logic to predetermine which pixel (9) will be authorised at a given moment and for how long, is the one that allows the reproduction of an analog video signal without needing to digitise it or even define previously the number of pixels to be used on the matrix.

The synchronism pulses found in the video signal, vertical and horizontal ones, will be applied onto the sequential device input (10) always in a way as to reset the sequential devices.

With the "MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGES" it is possible to add or deduct pixels (9) to or from the matrix line without compromising the functionality of the device, because as it has already been mentioned, the height and the width of the image is not predetermined like in the matrix digital systems, but determined at any given time by the variation of the frequency of the oscillator contained in each sequential distribution device, (3) and (4) in the same way as it is adjusted the height and width of the image on television sets or monitors whenever it is convenient. Consequently with this system video the image is displayed with any number of pixels (9), even with 4 pixels on the matrix and still the image will be reproduced so that each pixel will correspond to $\frac{1}{4}$ of the image, it is obvious that the greater the number of pixels being authorised on the matrix the greater will be the resolution.

Because of the characteristic of the sequential distribution device of having only one active output at any given time, while the others await their activation time, there will be only one authorised pixel on the matrix at any given time, because for such pixel to be authorised it needs the activation of the line and column simultaneously, in this way the maximum time in which each pixel remains disabled will be given by the equation: Maximum disabled time = $1 / \text{Pulse frequency of vertical synchronism of the video signal}$, thus to

visualise the image on the matrix, each pixel (9) must have the capacity of staying bright for the pre-determined time instructed by the video signal present at the moment of authorisation of each pixel and such pixel must maintain its brightness during the period in which it is disabled, as it happens
5 with cathodic rays tubes and on photoluminescent displays where the phosphorus performs the part of maintaining the brightness. When using light emitting devices that do not have the capacity of maintaining the brightness independently, without being authorised, such as LED's , incandescent lamp e similar ones, it is necessary the use of an analog memorisation electronic
10 device (11) connected to a driver to control the above mentioned light emitters.

The analog memorisation electronic device (11) takes advantage of a logical port (12) of the kind AND with two inputs, connected with the crossing of the matrix column and line. This way the pixel will only be authorised when the respective line and column are active. As a result the
15 output of the AND port will activate one or more electronic switches (13), depending if the pixel is dichromatic or polychromatic. The electronic switch (13) has the function of permitting the connection of the video signal ready at the switches (14) during the moment of the authorisation of the pixel so that this same video signal be stored under the form of tension into a capacitor (15).
20 After the disabling of the pixel and the release of the electronic switch (13), the capacitor (15) memorised analogically the voltage of the video signal present at the moment of authorisation and keeps such voltage up to the next authorisation of the pixel, when again through the electronic switch (13) the video signal determines or not a new voltage for the capacitor (15). For the
25 light emitter (16) to be activated using the voltage memorised by the capacitor (15), it is utilised an operational amplifier (17) configured as follower and not as a unitary gain voltage inverter with high input impedance and low output impedance which purpose is to activate the base of a transistor driver (18) that controls the light emitter (16) or a set of these according to the capacitor

voltage. It is obvious that for a dichromatic or polychromatic pixel it is also necessary to increase the number of electronic switches (13), capacitors (15), operational amplifiers (17), transistors (18) and so on, considering that the switches (13), one for each colour video signal, must be activated by the same
5 port (12), type AND, that authorises the pixel.

For an application with a photoluminescent device, it would be possible to build a matrix where the lines are grid strips (19) and the columns are anode strips covered by photoluminescent material (20), once the cathode (21) that may be hot or cold, it is utilised for the direct application of
10 the video signal onto the input (22) which is always present by means of a transformer with central derivation, in the case of hot cathode, and that has the function of heating up the filament emitting so the electrons against the photoluminescent material deposited onto the anode, needed for light emission, this happens only when the grid and the anodes overlap and are polarised by
15 positive voltage and this may occur only once on each of the matrix points, which are determined by the sequential distribution devices mentioned before that have their active outputs positively polarised, these outputs are polarised by negative voltage which in turn repels the electrons of the cathode. The two extra sequences of grids added, in turn vertical and horizontal, are placed as
20 matrix, one on top of the other at angle of 90° (ninety degrees).

For a monochromatic version the anode shall be coated with only one kind of phosphorous corresponding to the desired colour. The polarisation of the grids is provided by the sequential distribution devices. The first sequence of grids is controlled by the vertical distribution device while the other
25 sequence is controlled by the horizontal distribution device thus defining a unique crossing of the polarised grids at one time. The anodes are all time polarised by an independent tension produced by the sequential distribution devices and that have as objective to obtain a greater acceleration of the electrons that may pass through the vertical and horizontal grids, against the

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phosphorous, obtaining so a higher brightness proportionally to the polarising tension. The video signal is applied directly to the cathode which maybe hot or cold.

For a colour version of the "MATRIX ANALOG SYSTEM FOR THE
5 REPRODUCTION OF IMAGES" using a photoluminescent matrix, it is necessary that the matrix had its anode strips covered with photoluminescent material for the emission of different colours and that the pixel be triple once the grid strip (19) is common to the whole pixel but the anode strip (20) is divided in 3 and each subdivision of the strip has to emit one of the 3 primary
10 colours of the light spectrum, one strip emits the red light (20.1), another one emits the green colour (20.2) and another one the blue light (20.3), thus the polychromatic pixel reproduces combined the colours and hues of visible spectrum in the same as in the cathodic ray kinescopes. As there is a unique cathode (21) for the connection of the video signal and we actually have three
15 kinds of video signals, one for the red signal, one for the green one and one for the blue one, it becomes necessary a control system to co-ordinate each kind of video signal in a way so that this has access to the cathode when the sequential device that controls the anode strips (1) authorises the anode strip of the corresponding colour. Such control may be performed with a third sequential
20 device as this device has only 3 outputs from a1 to a3, and that utilises the same oscillator (3) of the sequential device (1) that controls the anode strips. As a result this outputs (a1), (a2) and (a3) control 3 electronic switches for the video signal, one for each colour. With the addition of the two sequences of grids, namely the vertical and the horizontal one, considering a polychromatic
25 version, the second sequence of grid is subdivided into three smaller grids which are as thick as the phosphorus that covers the anode strips which are overlaid; the connections of the sequential devices instead of being attached to the anode strips are now attached to these grid strips. The anode strips that are now connected all together, receive a fixed tension.

CLAIMS

1- "MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGES", with sequential devices, built with dedicated components, transistors, passive elements, logic ports, for the control of two-dimensions
5 matrixes to activate light emitting pixels (9) of the traditional kind such as photoluminescent, LED's, lamps and so on, characterised by an analog pixel matrix command accomplished through 2 independent sequential distribution devices (1) and (2), controlling by means of its outputs the authorisation of a non predetermined number of pixels (9), these devices have an input (10) that
10 allow for the synchronisation of the image through the synchronising pulse, present in the video signal and in a way to permit through an internal oscillator in each sequential device, the sweeping speed of the lines and columns of the matrix.

2- "MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGES", in accordance to claim 1, characterised for presenting a system
15 dispositions for the construction of polychromatic pixels on photoluminescent device with unique grip pixels (19) and triple anode (20.1), (20.2) and (20.3), in a way that each anode has the characteristic of emitting light with one of the three primary colours of the visible spectrum (red, green, blue) and with a
20 parallel filament cathode (21) for the video signal.

3- "MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGES", in accordance with claim 1, characterised for presenting a system for utilising analog memory and drive for the control of pixels (11) that do not
25 present the characteristic of emitting light while not powered (LED's, lamps and similar devices), on matrixes (as described at page 7/10, line 15 - of the original document).

4- "MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGES", according to claim 2, featuring the addition of one more sequence

of grids constructing the matrix with the already existing grid and the connection of all anode strips in common or a unique anode or the application of a higher fixed voltage and on this anode the layering of phosphorus in its monochromatic or polychromatic version, being the two grid sequences, vertical and horizontal, disposed as matrix, laid one on top of the other at an angle of 90° (ninety degrees).

5- "MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGES", according to claim 2, featuring as variation on the monochrome version, the anode covered by only one kind of phosphorus corresponding to the desired colour, the polarisation of the grids is performed by the sequential distribution devices, being the first sequence of grids controlled by the vertical sequential distribution device and the other by the horizontal sequential distribution device, presenting only one crossing of the polarised grids at a given time, the anodes are always polarised by an independent tension produced by the sequential distribution devices for a higher acceleration of the electrons passing at the vertical and horizontal grids against the phosphorus, obtaining thus a brighter emission of light, as greater as the polarising tension itself, the video signal is applied on the cathode which may be cold or hot.

6- "MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGES", according to claim 2, featuring as variation on the monochrome version a second sequence of grids, each one subdivided into three smaller grids as thick as the phosphorus strips that cover the anode, the strips are overlaid and the connection of the sequential devices instead of being applied to the anodes strips are now applied to these grid strips, the anode strips which are now connected all together receive a fixed tension.

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(81) Designated States: AE, AT, AU, CA, CN, ID, IL, JP, KP, KR, MX, RU, TR, US, ZA, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

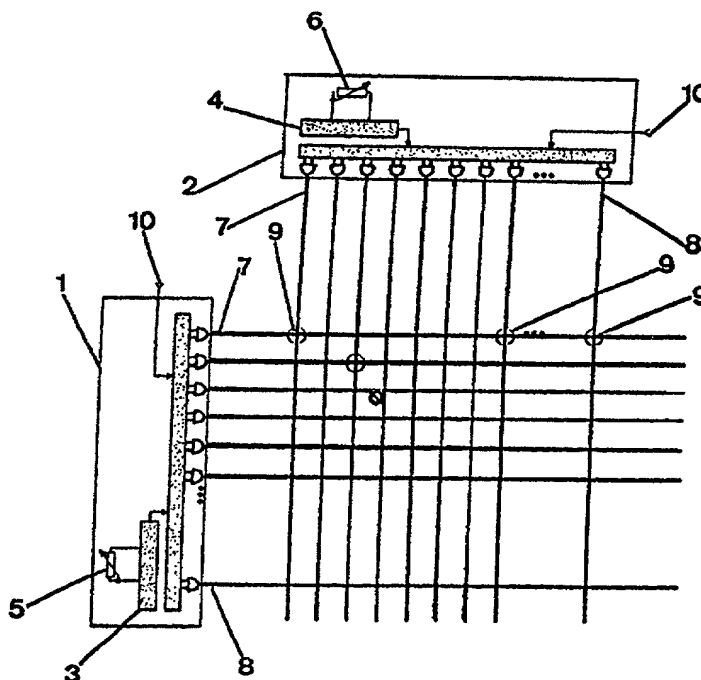
Published

Without international search report and to be republished upon receipt of that report.

(54) Title: MATRIX ANALOG SYSTEM FOR THE REPRODUCTION OF IMAGES

(57) Abstract

Matrix analog system for the reproduction of images characterised for presenting an electronic command system for matrixes for the reproduction of video images in real time by means of pixels in a way that the image displayed by the matrix had analog attitude and characteristics and that do not depend on previous processing of the video signal through analog/digital or digital/analog converters, without the need for microprocessors, digital memories, shift registers or even computers and converters which are normally needed so that images could be generated on a pixel matrix. Presents variations that define the means for the building of pixel matrixes that do not have the characteristic of emitting light while not powered (LED's, lamps and similar devices) and means for the building of a photoluminescent matrix to allow the reproduction of colour images. Presents the addition of two grids for an improved brightness of the phosphorus.



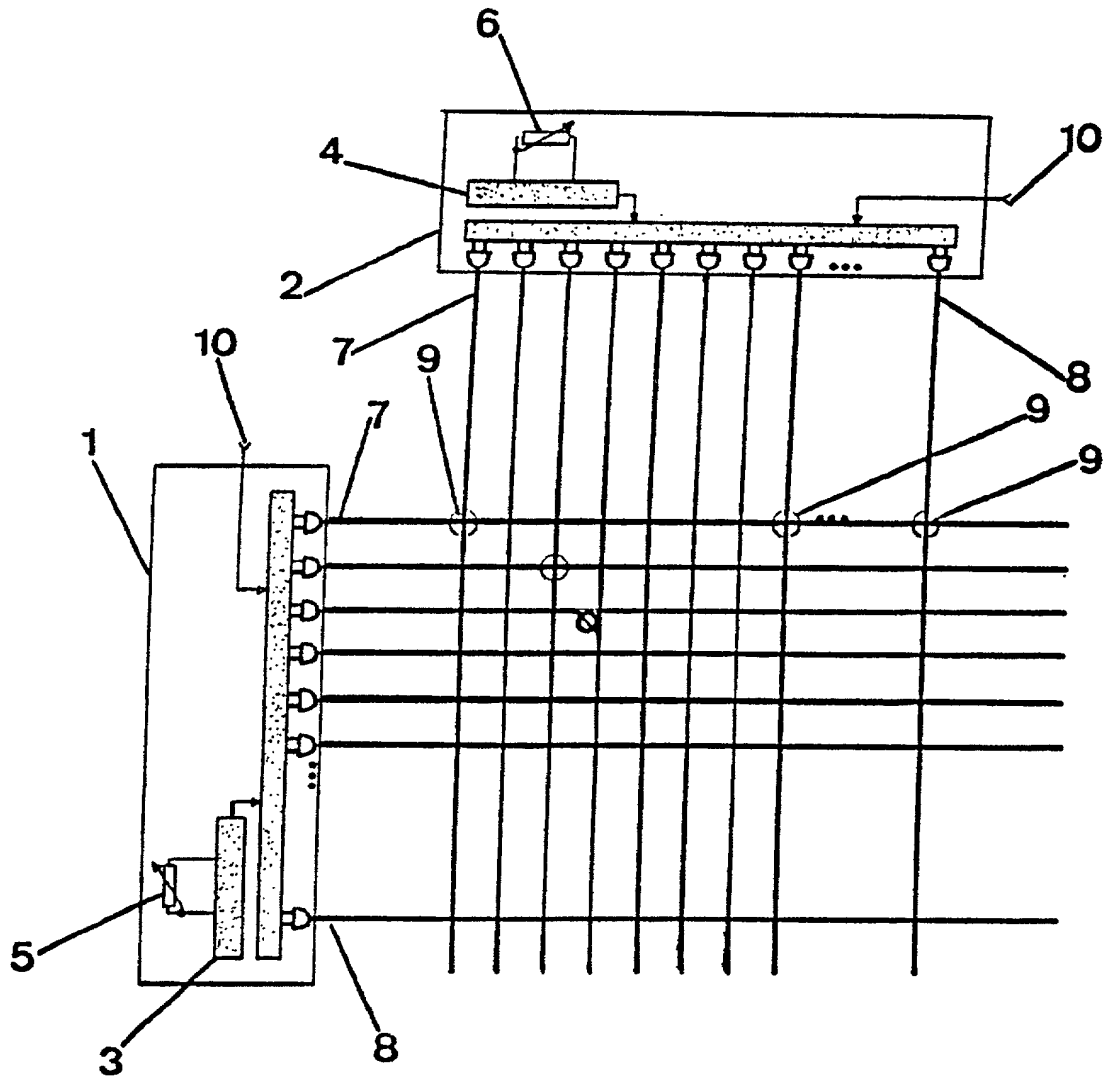


FIG. 01

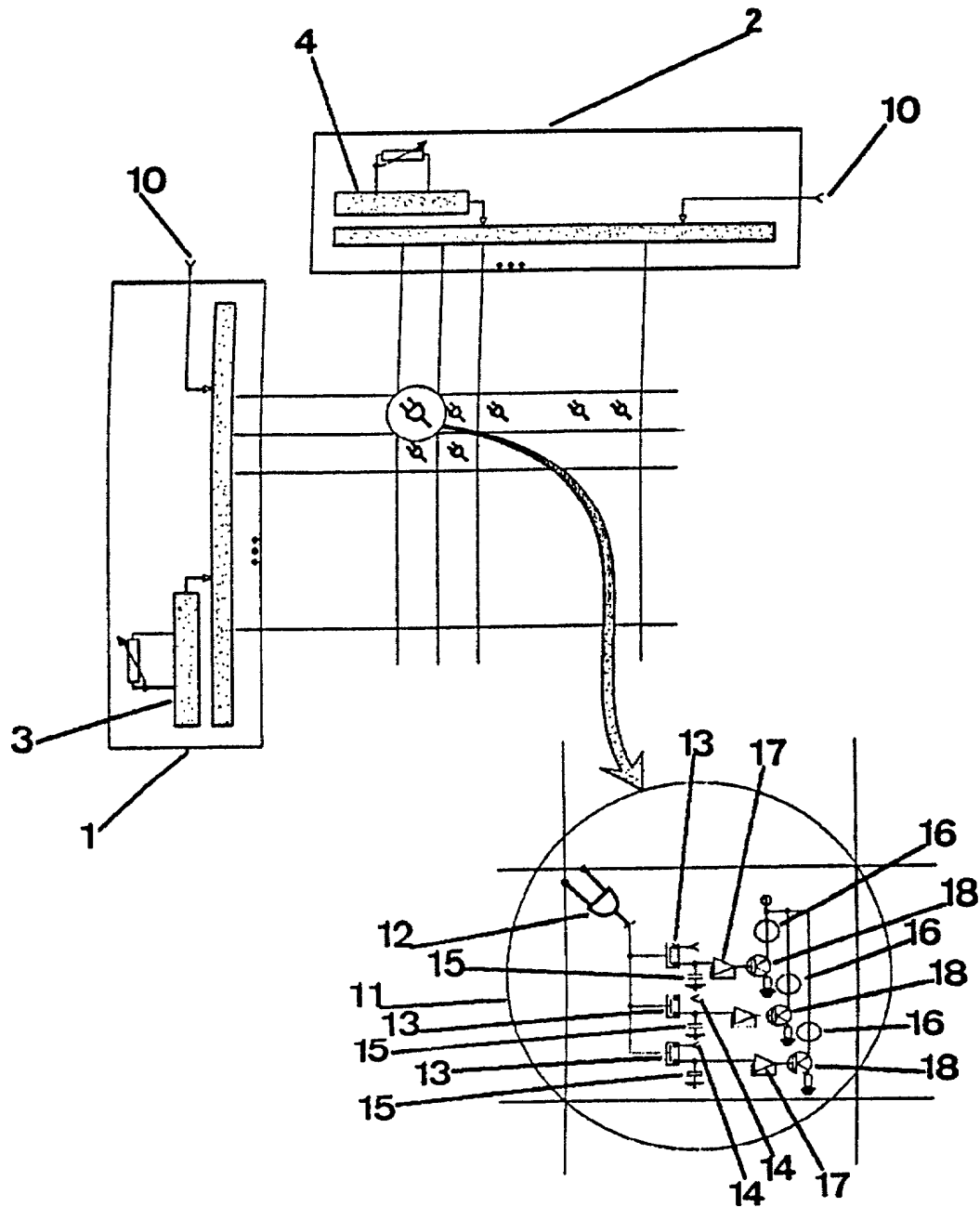


FIG. 02

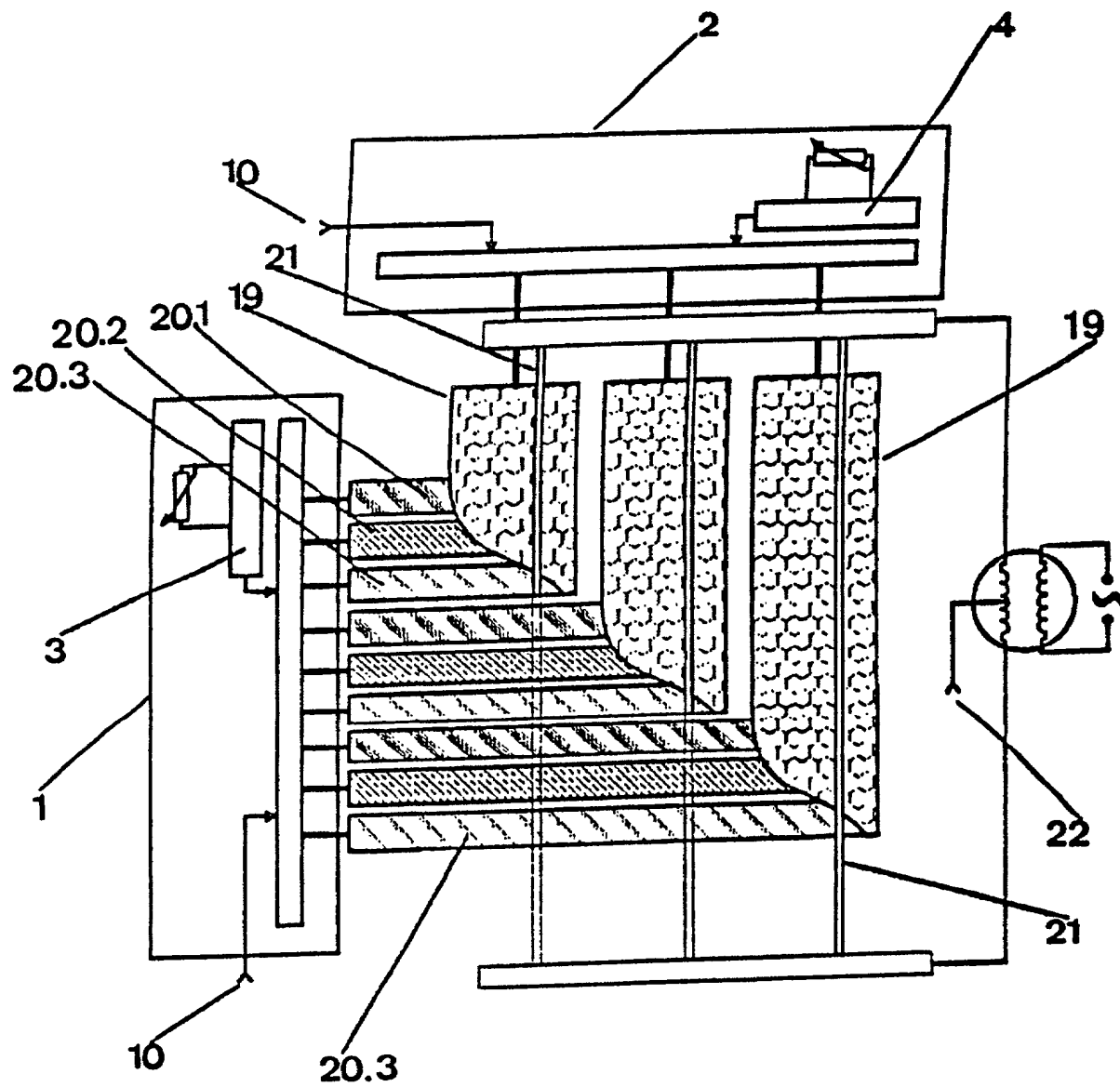


FIG. 03



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DECLARATION

| | | |
|---|----------------------|---------------------|
| DECLARATION FOR UTILITY PATENT APPLICATION (37 C.F.R. 1.63) | Attorney Docket No. | G334.312-1 |
| | First Named Inventor | Nereu Gouvêa et al. |
| | Filed | |

As a below named inventor, I hereby declare that my residence, post office address, and citizenship are as stated below.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **MATRIX ANALOG SYSTEM FOR REPRODUCTION OF IMAGES**

the specification of which:

☐ is attached hereto; and/or

X was filed on June 17, 1999 as PCT International Application Number **PCT/BR99/00047**

☐ and was amended under PCT Article 19 on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

| Prior Foreign Application Number(s) | Country | Foreign Filing Date (MM/DD/YYYY) | Certified Copy Attached? Yes No | No Priority Claimed? |
|---|---------|-------------------------------------|--|--------------------------|
| PI 9802700-0 | Brazil | 11 August 1998 | No | <input type="checkbox"/> |
| MU 7901399-6 | Brazil | 17 May 1999 | No | <input type="checkbox"/> |

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

| Application Number(s) | Filing Date (MM/DD/YYYY) |
|-----------------------|--------------------------|
| 09/762,876 | 12 February, 2001 |

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(612) 339-1863

DECLARATION

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

| U.S. Parent Application or PCT Parent Number | Parent Filing Date (MM/DD/YYYY) | Parent Patent Number (if applicable) |
|--|------------------------------------|---|
| PCT/BR99/00047 | June 17, 1999 | |
| | | |

DIRECT ALL CORRESPONDENCE TO:

| | |
|-----------|---|
| Name | |
| Address | Kinney & Lange, P.A. The Kinney & Lange Building 312 South Third Street Minneapolis, Minnesota 55415-1002 United States |
| Telephone | (612) 339-1863 |
| Fax | (612) 339-6580 |

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

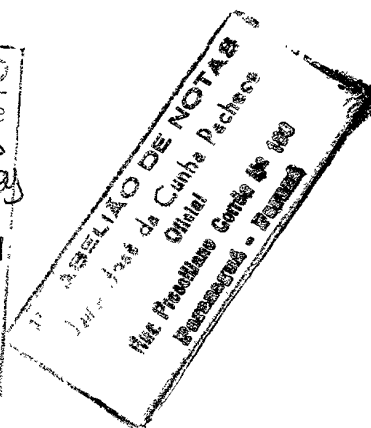
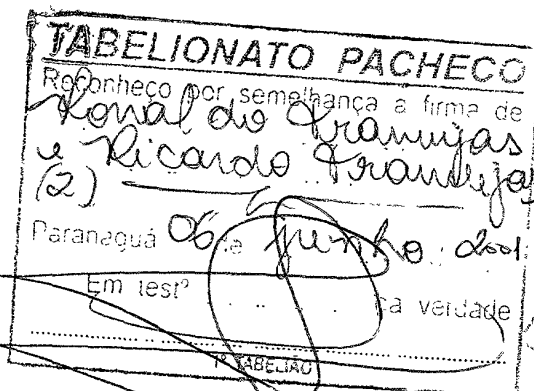
| | |
|--|---|
| Sole or First Inventor: Nereu Gouvêa | |
| Given Name (First and middle (if any)) | Family Name or Surname |
| Inventor's signature | Date: May 30, 2001 |
| Residence City, Country | Paranaguá, PR, Brazil B/RX Citizenship: Brazilian |
| Post Office Address | 3ª Quadra, Nº 26 Jardim Eldorado, CEP-83215-000 |
| City, State, Country | Paranaguá, PR, Brazil |

1º TABELÃO DE NOTAS
Jairo José da Cunha Pacheco
Ostele
Rua Proceliana Costa de las
Paranaguá - Paraná

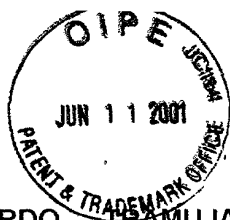
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| TABELIONATO PACHECO | |
| Reconheço por semelhança a firma de Nereu Gouvêa | |
| Paranaguá | 06 de junho de 2001 |
| Em testº | da verdade |
| 1º TABELÃO | |

| | | |
|--|---------------------------|---------------------------|
| Second Inventor: | | Ronaldo Tramujas |
| Given Name (First and middle (if any)) | | Family Name or Surname |
| Inventor's signature | | Date: May 30, 2001 |
| Residence City, Country | Paranaguá, PR, Brazil BRX | Citizenship: Brazilian |
| Post Office Address Rua Bento Munhoz da Rocha Neto, nº2.049, Bairro Aeroporto, CEP-83215-00 | | |
| City, State, Country Paranaguá, PR, Brazil | | |

| | | |
|--|---------------------------|---------------------------|
| Third Inventor: | | Ricardo Tramujas |
| Given Name (First and middle (if any)) | | Family Name or Surname |
| Inventor's signature | | Date: May 30, 2001 |
| Residence City, Country | Paranaguá, PR, Brazil BRX | Citizenship: Brazilian |
| Post Office Address Rua Bento Munhoz da Rocha Neto, nº2.049, Bairro Aeroporto, CEP-83215-00 | | |
| City, State, Country Paranaguá, PR, Brazil | | |



PROCURAÇÃO



O abaixo assinado **RICARDO TRAMUJAS** comerciante, com n° de CPF 838737599-34 e RG 4412577-3/IIIPR, domiciliado na Rua Bento Munhoz da Rocha Neto n° 2049 - Paranaguá - PR - Brazil, pela presente outorga a **KLINNEY & LANGE**. Dr. Z. Peter Sawicki - 312 Fouth Avenue South Minneapolis, Minnesota 554115-1659 - U.S.A., perante Escritórios / Órgãos e Autoridades Nacionais que correspondam para a concessão / outorga de registros de marcas de produtos e serviços, patentes de invenções PI9802700-0, MU7901399-6 PI0000932-6(PCT/BR99/00047)-(PCT/BR01/00037), , modelos e desenhos industriais, direitos autorais e outros do Direito Industrial e Intelectual da outorgante, cujo efeito permite dar todos os andamentos necessários perante qualquer autoridade administrativa ou judicial para assegurar completa proteção dos direitos de propriedade industrial ou intelectual da outorgante, solicitar informações referente o trâmite e fases de processos / pedidos apresentados pela outorgante, apresentar requerimento / petições, limitar seu alcance, formular descrições, reclamações, manifestações e reivindicações, apresentar e retirar oposições e apelações, cobrar impostos, solicitar testemunhas, emendar, autorizar, receber documentos, efetuar transferências e prestar cauções, promover e defender oposições judiciais, nulidade, troca de nome comercial, cessar atos de concorrência desleal e uso em qualquer jurisdição, assim como acusar os infratores dos mencionados direitos, embargar, solicitar e praticar medidas prévias de constatação, e realizar atos, diligências para o melhor desempenho do presente mandato mediante autorização da outorgante; A presente procuração não poderá ser substabelecida pelo outorgado sem anuência prévia por escrito da outorgante; Os procuradores em eventual substabelecimento a terceiros responderão exclusivamente pelos atos praticados pelos substabelecidos; A presente procuração terá duração de (05) cinco ano a partir da data do presente documento.

TRAMUJAS, RICARDO
Applicant's name

Testemunhas **Daniilo César de Castro**
CPF 598.346.849-91
RG 3.590.743-2PR

POWER OF ATTORNEY

The undersigned **TRAMUJAS, RICARDO**, trader with number CPF 838737599-34 e RG 4412577-3/IIIPR domiciled in 2049, Bento Munhoz da Rocha Neto at Street, City Paranaguá- PR- BR, do hereby grant to **KLINNEY & LANGE**. Dr. Z. Peter Sawicki - 312 3° St - Minneapolis, Minnesota 554115-1659 - U.S.A., full and sufficient power of attorney to apply to the Industrial Property Department for all matters relating to industrial privileges PI9802700-0, MU7901399-6, PI0000932-6 (PCT/BR99/00047)-(PCT/BR01/00037), and the protection of industrial rights of industrial property as stated by the corresponding Law Act. Without it being limitative, it is a title merely illustrative, they may: File applications, oppositions, assignments and multi claims; as well as nullity demands previously notified to the demanding, expert's reports, limit applications, opposition to these and to all proceedings previously carried out, effect assignments, compromise, collect, reach agreements from applications and oppositions, request notations in the register and generally do all and whatsoever shall be necessary for all purposes hereinabove stated. Full power is conferred equally and with the same rights to the presents to act before the Arbitrage Tribunal of Industrial Property to make arrangements, to file an appeal, to desist from this or to answer it. This power of attorney may substitute these presents if they think proper, and revoke such substitution, if necessary. They authorized to act before the Intellectual Property Office, and complain before the Supreme Court as may be required, means of permission to the allowed; The power of attorney can not be transferred or assigned by attorney without previous written consent by allowed; If the attorney to revoke this power, they be responsible either for the pratic action of the revoked; This power of attorney shall have a duration period of (05) five year as of the date in the present power.

Given and signed this **30 May , 2001**.

Adriane Silva Martins
CPF 022.904.719-09
RG 6.661.818-8- PR

PROCURAÇÃO

JUN 11 2001



POWER OF ATTORNEY

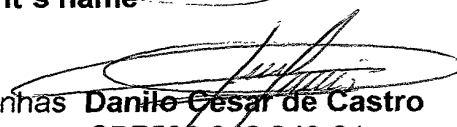
O abaixo assinado **RONALDO TRAMUJAS** administrador, com nº de CPF 5816120190-00 e RG 3388062/IIPR, domiciliado na Rua Bento Munhoz da Rocha Neto nº 2049 - Paranaguá - PR - Brazil, pela presente outorga a **KLINNEY & LANGE**. Dr. Z. Peter Sawicki - 312 Fouth Avenue South Minneapolis, Minnesota 554115-1659 - U.S.A., perante Escritórios / Órgãos e Autoridades Nacionais que correspondam para a concessão / outorga de registros de marcas de produtos e serviços, das patentes de invenções PI9802700-0, MU7901399-6 PI0000932-6(PCT/BR99/00047)-(PCT/BR01/00037), modelos e desenhos industriais, direitos autorais e outros do Direito Industrial e Intelectual da outorgante, cujo efeito permite dar todos os andamentos necessários perante qualquer autoridade administrativa ou judicial para assegurar completa proteção dos direitos de propriedade industrial ou intelectual da outorgante, solicitar informações referente o trâmite e fases de processos / pedidos apresentados pela outorgante, apresentar requerimento / petições, limitar seu alcance, formular descrições, reclamações, manifestações e reivindicações, apresentar e retirar oposições e apelações, cobrar impostos, solicitar testemunhas, emendar, autorizar, receber documentos, efetuar transferências e prestar cauções, promover e defender oposições judiciais, nulidade, troca de nome comercial, cessar atos de concorrência desleal e uso em qualquer jurisdição, assim como acusar os infratores dos mencionados direitos, embargar, solicitar e praticar medidas prévias de constatação, e realizar atos, diligências para o melhor desempenho do presente mandato mediante autorização da outorgante; A presente procuração não poderá ser substabelecida pelo outorgado sem anuência prévia por escrito da outorgante; Os procuradores em eventual substabelecimento a terceiros responderão exclusivamente pelos atos praticados pelos substabelecidos; A presente procuração terá duração de (05) cinco ano a partir da data do presente documento.


The undersigned **TRAMUJAS, RONALDO**, administrator, with number CPF 5816120190-00 e RG 3388062/IIPR domiciled in 2049, Bento Munhoz da Rocha Neto at Street, City Paranaguá- PR- BR, do hereby grant to **KINNEY & LANGE**. Dr. Z. Peter Sawicki - 312 3° St - Minneapolis, Minnesota 554115-1659 - U.S.A., full and sufficient power of attorney to apply to the Industrial Property Department for all matters relating to industrial privileges PI9802700-0, MU7901399-6 PI0000932-6(PCT/BR99/00047)-(PCT/BR01/00037), and the protection of industrial rights of industrial property as stated by the corresponding Law Act. Without it being limitative, it is a title merely illustrative, they may: File applications, oppositions, assignments and multi claims; as well as nullity demands previously notified to the demanding, expert's reports, limit applications, opposition to these and to all proceedings previously carried out, effect assignments, compromise, collect, reach agreements from applications and oppositions, request notations in the register and generally do all and whatsoever shall be necessary for all purposes hereinabove stated. Full power is conferred equally and with the same rights to the presents to act before the Arbitrage Tribunal of Industrial Property to make arrangements, to file an appeal, to desist from this or to answer it. This power of attorney may substitute these presents if they think proper, and revoke such substitution, if necessary. They authorized to act before the Intellectual Property Office, and complain before the Supreme Court as may be required, means of permission to the allowed; The power of attorney can not be transferred or assigned by attorney without previous written consent by allowed; If the attorney to revoke this power, they be responsible either for the pratic action of the revoked; This power of attorney shall have a duration period of (05) five year as of the date in the present power.

Given and signed this **30 May , 2001**.


TRAMUJAS, RONALDO

Applicant's name


Testemunhas **Danilo Cesar de Castro**
CPF 598.346.849-91
RG 3.590.743-2PR


Adriane Silva Martins
CPF 022.904.719-09
RG 6.661.818-8- PR